

REMARKS

In response to the Office Action mailed January 4, 2008, Applicants respectfully request reconsideration. Claims 1-20 and 23-25 are pending for examination, with claims 1, 16-20, 23, and 25 being independent claims. In this paper, no claims have been amended and no new claims have been added or canceled. The application as now presented is believed to be in allowable condition.

I. Rejections Under 35 U.S.C. §103

Claims 1, 2, 9, 16-20, and 23-25 (including independent claims 1, 16-20, 23, and 25) were rejected under 35 U.S.C. 103(a) as allegedly being obvious over U.S. Patent No. 6,771,966 B1 ("Chow"). Claims 3 and 10 were rejected under 35 U.S.C. 103(a) as allegedly being obvious over Chow in view of U.S. Patent No. 2004/0250128 A1 ("Bush"). Claims 4, 7, 8, 11, 14, and 15 were rejected under 35 U.S.C. 103(a) as allegedly being obvious over Chow in view of U.S. Patent No. 2003/0099194 A1 ("Lee"). Claims 5, 6, 12, and 13 were rejected under 35 U.S.C. 103(a) as allegedly being obvious over Chow in view of U.S. Patent No. 6,411,598 B1 ("McGlade"). Applicants respectfully traverse these rejections.

A. Discussion of Chow

Chow is related to a system and method for planning the deployment of wireless communication links for wireless networks such as an urban area radio network (Abstract). In Chow, transmit and receive paths or links with minimum signal interference are chosen between desired locations (desired locations can also be referred to as network "nodes" or Internet Transit Access Points (ITAP) (Col. 1, Lines 25-26). It is noteworthy that Chow's disclosure is not related to determining the location of the nodes; rather, in Chow, nodes are previously established entities that are selected from a database that stores relative positional information on the previously determined nodes. The Office Action acknowledges this on page 2, paragraph 5, confirming that in Chow, the network provides previously determined node site information.

The method disclosed in Chow to deploy wireless communication links for RF networks comprises performing a link analysis. The link analysis relies on using link budget equations to determine the signal to interference level. The link analysis uses several factors such as the path

loss, receiver sensitivity, and transmit and receive antenna gain (Col. 15, Lines 6-21). In Fig. 14, other aspects of Chow's deployment method including Radio Link Design, Field Verification, and In-Service Analysis tools are disclosed. However, none of the tools disclosed by Chow teaches or suggests identifying and determining the placement of a network node. Furthermore, none of the tools disclosed in Chow provides information related to node capacity constraints, link capacity, and node demands for flow.

Chow is related to networks such as metropolitan area wireless networks, commercial networks (Col. 1, Lines 49-53), and RF networks (Col. 3, Lines 27-30). Chow does not discuss mesh or ad-hoc networks. Furthermore, Chow discloses node connections through links that are "within effective range, within line of sight." Clearly, nodes in mesh networks do not have to be within line of sight or effective range. Hence, one of skill in the art would appreciate that Chow does not disclose a method specified for or adapted to mesh networks.

It's also noteworthy that nowhere in the reference does Chow disclose or suggest the use of Media Access Control (MAC) protocols.

B. Applicants Claims Patentably Distinguish Over Chow

1. Claim 1

Applicants' claim 1 is related to a method for determining placement of internet taps (ITAPS) in a multi-hop wireless mesh network, wherein the network employs a contention based media access control (MAC) protocol and the network comprises nodes and links between the nodes. The method comprises: accepting connectivity information for the network, comprising link capacity constraints, node capacity constraints, node demands for flow, and a set of potential ITAPs to be opened; iterating through the set of potential ITAPs to be opened; selecting an ITAP, from the set of potential ITAPs to be opened, to be added to a set of currently open ITAPs, wherein the selected ITAP increases the node demands satisfied when opened together with ITAPs in the set of currently open ITAPs; adding the selected ITAP to the set of currently opened ITAPs; repeating the iterating, selecting, and adding until all the node demands are satisfied; and implementing the set of currently opened ITAPs in the network.

On pages 2 and 3, the Office Action alleges that Chow discloses a method wherein the wireless mesh network employs a contention based MAC protocol. Applicants respectfully disagree. As noted above, nowhere in the reference does Chow mention using a MAC protocol or a mesh network. Instead, Chow is focused on RF networks with pre-determined locations of network nodes. On page 3, line 3, the Office Action equates selecting links in Chow with selecting an ITAP from the set of potential ITAPs as described in the Applicants' invention. However, selecting a link and selecting a network node are notably different. As discussed above, Chow is concerned with selecting or creating links between nodes; in contrast, the method of claim 1 relates to determining the placement of nodes in a mesh network (e.g. to meet node and network demands).

Chow is also silent on the specific limitation cited in claim 1 "adding the selected ITAP to the set of currently opened ITAPs" because, as noted above, Chow is **NOT** related to selecting nodes or adding them to a database. Chow is related to deploying and selecting links in a network between nodes at pre-determined locations.

Furthermore, on page 3, the Office Action takes an official notice alleging that "wireless network connectivity information normally comprises link capacity constraints, node capacity constraints, and node demand for flow." To the extent Applicants understand this assertion, Applicants respectfully disagree and traverse the Examiner's assertion as not properly officially noticed. As noted in Section IA above, Chow fails to teach or suggest at least this element of claim 1. Accordingly, pursuant to MPEP § 2144.03C and 37 CFR 1.104(c)(2), Applicants respectfully request the Examiner to provide some documentary evidence in support of the Examiner's assertions in the next Office Action if the rejection is to be maintained. If the Examiner is relying on personal knowledge to support the finding of what is known in the art, the Examiner must provide an affidavit or declaration setting forth specific factual statements and an explanation to support the finding, pursuant to 37 CFR 1.104(d)(2). Absent the foregoing and for the reasons discussed above, claim 1 patentably distinguishes over Chow and is in condition for allowance. Therefore, the rejection of claim 1 should be withdrawn. Claims 2-15 depend from claim 1 and are allowable based at least upon their dependency.

2. Independent Claims 16-20

Claim 16 is a computer-readable medium claim for performing a method similar to that recited in claim 1. Claim 17 is a method similar to claim 1 with additional limitations related to a set of time intervals. Claim 18 is a computer-readable medium claim for performing a method similar to that recited in claim 17. Claim 19 is a method similar to claim 17 with a modification that the selected ITAP will satisfy the largest node demand. Claim 20 is a computer-readable medium claim for performing a method similar to that recited in claim 19. Accordingly, for reasons similar to those disclosed above in connection with claim 1, independent claims 16-20 patentably distinguishes over Chow and are in condition for allowance. Therefore the rejection of claims 16-20 should be withdrawn.

3. Independent Claims 23 and 25

Independent claims 23 and 25 relate to a method and computer-readable medium containing instructions for reducing potential placement locations of internet taps (ITAPs) in a multi-hop wireless mesh network by identifying equivalence classes of nodes in the network which may be serviced by the same ITAP. The method comprises: accepting equivalence class information for the network; determining whether a first equivalence class is covered by a second equivalence class; and eliminating the first equivalence class from consideration as a potential placement location for an ITAP if the first equivalence class is covered by the second equivalence class.

On page 5, the Office Action alleges that Chow teaches selecting a desired location for an ITAP in order to increase the coverage of service area. Applicants respectfully disagree. As noted above, Chow does not teach selecting a location for an ITAP to increase coverage of the service area. Furthermore, Applicants' claims 23 and 25 are related to reducing potential placement locations of ITAPs and not just selecting locations. Additionally, the Office Action makes an assumption that a second equivalence class in claims 23 and 25 can be interpreted as a class with a known or previously selected location. This is not a valid assumption as it is not obvious for one of ordinary skill in the art to know that a second equivalence class and a first equivalence class cover the same locations. Claims 23 and 25 include a limitation on determining whether the first equivalence class and the second equivalence class are covering the same locations.

Accordingly, for the reasons discussed above, claim 23 and 25 are patentably distinguishable. Claim 24 depends from claim 23 and is allowable based at least upon its dependency. Therefore the rejection of claims 23-25 should be withdrawn.

II. Comments on Dependent Claims

Since each of the dependent claims depends from a base claim that is believed to be in condition for allowance, Applicants believe that it is unnecessary at this time to argue the allowability of each of the dependent claims individually. However, Applicants do not necessarily concur with the interpretation of the dependent claims as set forth in the Office Action, nor do the Applicants concur that the basis for the rejection of any of the dependent claims is proper. Therefore, Applicants reserves the right to specifically address the patentability of the dependent claims in the future.

CONCLUSION

It is believed that all of the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue, or comment set forth in the Office Action does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Furthermore, nothing in this paper should be construed as intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify any concession of unpatentability of the claim prior to its amendment.

In view of the foregoing amendments and remarks, this application should now be in condition for allowance. A notice to this effect is respectfully requested. If the Examiner believes, after this amendment, that the application is not in condition for allowance, the Examiner is requested to call the Applicants' representative at the telephone number indicated below to discuss any outstanding issues relating to the allowability of the application.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicants hereby request any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 23/2825.

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Respectfully submitted,

By: 

Joseph J. Teja, Jr.

Registration No.: 45,157

WOLF, GREENFIELD & SACKS, P.C.

Federal Reserve Plaza

600 Atlantic Avenue

Boston, Massachusetts 02210-2206

(617) 646-8000